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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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16/24, 16/28, G01N 33/68, A61K 38/19

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KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD,
MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD,
SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US,
UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS,
MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ,
BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE,
CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC,
NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA,
GN, GW, ML, MR, NE, SN, TD, TG).

Published

With international search report.

(54) Title: MEMBER OF THE TNF LIGAND FAMILY

(57) Abstract

The invention provides an isolated protein which is a member of the TNF ligand superfamily and comprising: i) a polypeptide having the amino acid sequence of figure (1) or ii) a variant of the polypeptide of i).

MDDSTEREQSRLTSCCLKKREE

MKLKECVSILPRKESPSVRSSKDGKLLAAT

LLLALLSCCLTVVSFYQVAALQGD LASRA

ELQGHHA EKLPAGAGAPKAGLEEAPAVTAG

LKIFEPPAPGEGNSSQNSRNKRAVQGPEET

VTQDCLQLIADSETPTTIQKGSYTFVPWLLS

FKRGSAL E EKENKILVKETGYFFIYGQVLY

TDKTYAMGH LIQRKKVHVFGDELSLVTLFR

CIQNM PETLPNN SCYSAGIAKLEEGDGLQL

AIPRENAQISLDGDVTFFGALKLL

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference PG3600	FOR FURTHER ACTION <small>see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.</small>	
International application No. PCT/EP 99/ 07303	International filing date (day/month/year) 05/10/1999	(Earliest) Priority Date (day/month/year) 23/12/1998
Applicant GLAXO GROUP LIMITED et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 5 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☒ furnished subsequently to this Authority in written form.

☒ furnished subsequently to this Authority in computer readable form.

☒ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☒ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☒ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (see Box II).

4. With regard to the title,

☐ the text is approved as submitted by the applicant.

☒ the text has been established by this Authority to read as follows:

MEMBER OF THE TNF LIGAND FAMILY

5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☒ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

2
☐ None of the figures.

INTERNATIONAL SEARCH REPORT

Intern Application No

PCT/EP 99/07303

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12N15/12 C12N15/19 C07K14/705 C07K14/52 C07K16/24
C07K16/28 G01N33/68 A61K38/19

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07K C12N G01N A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 98 18921 A (HUMAN GENOME SCIENCES INC ;NI JIAN (US); EBNER REINHARD (US); YU G) 7 May 1998 (1998-05-07) page 2, line 14 - line 19 page 7, line 25 -page 9, line 3 page 9, line 21 -page 10, line 8 page 13, line 8 - line 13 page 54, line 1 -page 57, line 28 claims 1-21; figure 1; examples 1-3	1-11, 16-20
X	EP 0 869 180 A (SMITHKLINE BEECHAM CORP) 7 October 1998 (1998-10-07) page 2, line 17 - line 25 page 3, line 1 - line 11 page 5, line 1 - line 45 page 10, line 21 - line 58 page 12, line 9 -page 14, line 46 claims 1-19	1-11, 16-20

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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

15 February 2000

Date of mailing of the international search report

21/02/2000

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 99/07303

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 98 27114 A (SCHERING CORP) 25 June 1998 (1998-06-25) page 2, line 6 - line 16 page 38, line 10 - line 18 claims 1-10; examples 1-5 ---	1-11, 16-20
X	WO 98 55620 A (MASIAKOWSKI PIOTR ; REGENERON PHARMA (US); VALENZUELA DAVID (US)) 10 December 1998 (1998-12-10) page 2, line 17 -page 3, line 20; claims 1-20; figure 1; examples 1-3 ---	1-11, 16-20
X	WO 98 55621 A (MASIAKOWSKI PIOTR ; REGENERON PHARMA (US); VALENZUELA DAVID (US)) 10 December 1998 (1998-12-10) page 2, line 17 -page 3, line 23; claims 1-20; figure 1; examples 1-3 ---	1-11, 16-20
A	GRUSS H -J-: "Molecular, structural, and biological characteristics of the tumor necrosis factor ligand superfamily" INTERNATIONAL JOURNAL OF CLINICAL AND LABORATORY RESEARCH, DE, SPRINGER, BERLIN, vol. 26, no. 3, 1996, pages 143-159, XP002094504 ISSN: 0940-5437 page 143, column 2 page 145, column 1 -page 146, column 1 -----	4,5,10, 11, 16-18,20

INTERNATIONAL SEARCH REPORT

International application No.

PCT/EP 99/ 07303

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
Remark: Although claim 18
is directed to a method of treatment of the human/animal
body, the search has been carried out and based on the alleged
effects of the compound/composition.
2. ☒ Claims Nos.: 12-15
because they relate to parts of the International Application that do not comply with the prescribed requirements to such
an extent that no meaningful International Search can be carried out, specifically:
See FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all
searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment
of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report
covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is
restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 12-15

Claims 12 and 13 and in part 14 and 15 refer to a compound without giving a true technical characterization. Moreover, no such compounds are defined in the application. In consequence, the scope of said claims is ambiguous and vague, and their subject-matter is not sufficiently disclosed and supported (Art. 5 and 6 PCT).

No search can be carried out for such purely speculative claims whose wording is, in fact, a mere recitation of the results to be achieved.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

INTERNATIONAL SEARCH REPORT

Inform: patent family members

International Application No

PCT/EP 99/07303

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9818921	A	07-05-1998	AU 7674596 A EP 0939804 A	22-05-1998 08-09-1999
EP 0869180	A	07-10-1998	CA 2232743 A JP 10323194 A	02-10-1998 08-12-1998
WO 9827114	A	25-06-1998	AU 5705898 A	15-07-1998
WO 9855620	A	10-12-1998	AU 7608898 A AU 7713098 A WO 9855621 A	21-12-1998 21-12-1998 10-12-1998
WO 9855621	A	10-12-1998	AU 7608898 A AU 7713098 A WO 9855620 A	21-12-1998 21-12-1998 10-12-1998